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### **REMARKS**

This amendment is responsive to the office action dated January 8, 2004.

Claims 1-55 were pending in the application. Claims 1-55 were rejected. No claims were allowed by the Examiner.

By way of this amendment, the Applicant has canceled Claims 1-14. Claims 15, 18-20, 22, 24-26, 28 and 33 have been amended. Claims 56-60 are newly added. The remaining claims are unchanged.

Accordingly, Claims 15-60 are currently pending.

#### **I. REJECTION OF CLAIMS UNDER 35 USC 102**

Claims 1-9, 14, 33, 35-51 and 53 were rejected under 35 USC §102(e) as being anticipated by the US Patent to Doerr et al 6,304,350.

Applicant respectfully disagrees and requests reconsideration.

The present invention seeks to reduce rack space, complexity and infrastructure requirements by providing a VCSEL/photodetector array system having the ability to generate/receive a different communication protocol (standard) at each optoelectronic device in the array. Improving on the parallel optical systems which transmitted a single data signal broken up into multiple parts and in parallel over multiple fibers, the present system creates an independent signal path on each fiber of the array. This is a departure from the manner typically used in the prior art. A simple comparison is that the old parallel interconnect systems used the 12 fiber MTP to transmit/receive one data signal between point A to point B. The data signal is the same multiplexed signal transmitted into all of the fibers. The present invention generates/receives 12 independent data signals which can travel from point A to points B-M, or receive 12 independent data signals from points B-M back to point A. In this application, numerous data signals are broadcast simultaneously and discretely from one another. Further, the signals may even be transmitted using different broadcast standards. This simply would not be possible in the present state of the art configuration.

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The original systems typically relied on multiplexing/demultiplexing on single fibers because this was the only way to reduce physical infrastructure. The modules and control electronics necessary to light a single fiber has very limited configurations that required a great deal of space for operation. The present invention, rather than multiplexing several independent signals into a single fiber transmission line utilizes one fiber and one optoelectronic device for each signal. The invention as presented herein implies that the VCSEL/photodetector arrays include a control system that is integrated with the optoelectronic devices to transmit/receive the various different standards/protocols and various different signals simultaneously on the system along parallel and discrete fiber channels.

This is clearly and dramatically different from the previous multiplex type system, where all of the signals launched along a single fiber had to be transmitted in the same protocol. In accordance with the present invention, by providing separate fibers driven by individual optoelectronic devices each capable of independent control using an integrated controller that are all into a single integrated system, various signals at various wavelengths or differing protocols can be transmitted simultaneously.

The claims of the present invention have been amended to more clearly reflect the novelty of the present invention. Specifically, the claims have been revised to reflect the grouping of individual optoelectronic devices and their individual coupled relationship with each of the respective and separate fibers. The claim thus recites a plurality of optoelectronic devices, with separated integrated controls to allow first and second signal independent communication paths and that the second ends of each path are physically remote from each other.

Claims 1-9, 14, 33, 35-51, 53 were rejected under 35 USC §102(b) as being anticipated by the US Patent to Doerr No. 6,304,350. Doerr discloses a waveguide grating router which de-multiplexes WDM signals from a single fiber into multiple fibers. A multi-frequency laser generates a wavelength spectrum effective for carrying a single WDM signal that is broadcast at a single protocol over a single fiber. At the termination location, a waveguide grating router de-multiplexes the WDM signal into its individual wavelengths for processing. While there are some similarities in structure, there are several distinctions which would not anticipate claim 1 as amended. Firstly, the receivers 131, 132 at the terminating ends of the fibers are not physically remote

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from each other as defined within the context of the present specification. Remote physical relationship is intended to mean different locations, i.e. different rooms of a building, different floors of a building or different buildings altogether. In Doerr, the WDM signal is received at a terminating location, and then the signal is de-multiplexed and provided to multiple receivers, which are all located at the same terminating location, usually within the same rack. Accordingly, the ends of the optical communication paths are not disposed in remote physical relation as required by the claim.

Further, the present invention provides for individual optoelectronic devices having a controller that drives each device separately relative to one another. Each fiber is coupled to a discrete and individually controlled optoelectronic device, thereby allowing each fiber within the system to be driven at using a different protocol or to transmit a completely independent signal.

Dependent claims 2-9 define additional features which are also not anticipated by Doerr. For example, as recited in claim 5, each of the communication paths is configured to communicate a plurality of WDM signals. The optical communication paths 104, 105 in Doerr are already de-multiplexed by the waveguide grating router, and thus the individual paths are not configured to communicate numerous different WDM signals at different standards on discrete fibers in the array. Only the one single interconnecting fiber can communicate a WDM signal.

Claims 6-9 define that each optical communication path is compliant with a different standard, i.e. each path is independently operating on a different communication standard and each operates independently from the other.

In contrast, Doerr discloses de-multiplexing a single WDM signal into its individual wavelength signals. As is well known, the WDM signal is generated according to one standard. In fact because the signals are multiplexed, they must be at the same protocol to travel coherently on the same fiber. Accordingly, each of the de-multiplexed wavelengths in Doerr is compliant with the same standard. The signals traveling on fibers 104 and 105 are thus compliant with the same standard, not independent standards as claimed.

This point is actually fairly important in the context of reducing rack system space and infrastructure needs. The fact that the present system integrates multiple different

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standards generating/receiving capabilities into a single array module can significantly reduce the required infrastructure at a single location. By generating/receiving separate and independent standards compliant signals from one module, the operator can eliminate separate rack systems for each of the standards as previously required.

The same arguments apply to the equivalent method claims 33, 35-51 and 53 and the newly added claims 56-60 in that they also define the same structural and functional standards independent relationships between the arrays.

Accordingly, since the present invention includes claimed elements and limitations that are not disclosed in Doerr, the Doerr reference cannot anticipate the present invention. Withdrawal of this rejection is respectfully requested.

## II. REJECTION OF CLAIMS UNDER 35 USC 103

Claims 10-11, 25, 26 and 30 were rejected under 35 USC §103 as being unpatentable over Doerr in view of Swirhun.

The Applicant respectfully requests reconsideration in light of the arguments set forth above with respect to Doerr.

The arguments set forth above with respect to Doerr are repeated herein. Swirhun discloses a parallel optical interconnect using an array of 850nm VCSELS and an MTP 12 fiber bundle to transmit one signal from point A to point B. This is the same physical configuration disclosed in Doerr and discussed in the arguments above. Each fibers in the array transmits a parallel portion of the same signal broadcast using the same protocol. Swirhun does not disclose nor teach nor suggest the provision of a VCSEL/photodetector array wherein each optical communication path is operated independently from one another according to a different communication standard and wherein each optical communication path is discrete from the other and can terminate independently from one another in a different physical location. Rather Swirhun discloses the standard prior art parallel optical interconnect wherein the 12 fiber MTP is used to communicate a single unified data stream over a bundle of fibers from point A to point B.

The addition of Swirhun simply does not provide sufficient additional disclosure to arrive at the disclosure of the present invention.

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Claims 12 and 27 were rejected under 35 USC §103 as being unpatentable over Doerr and Swirhun as applied to claim 11 above, and further in view of Giebel (MTP connector).

The Applicant respectfully requests reconsideration in light of the arguments set forth above with respect to Doerr and Swirhun.

Claims 13, 15-24, 28-29, 31-32, 34, 52, 54 and 55 were rejected under 35 USC §103 as being unpatentable over Doerr.

The Applicant respectfully requests reconsideration in light of the arguments set forth above with respect to Doerr as applied to claims 1-9, 33, 35-5 and 53.

The references cited by the Examiner do not contain disclosure relating to several critical elements and limitations of the present invention. Since the cited references either alone or in combination simply do not disclose the present invention they cannot be combined to render the present invention obvious. Accordingly, withdrawal of this rejection is requested.

III. CONCLUSION

Accordingly, claims 15-60 are believed to be in condition for allowance and the application ready for issue.

Corresponding action is respectfully solicited.

PTO is authorized to charge any additional fees incurred as a result of the filing hereof or credit any overpayment to our account #02-0900.

Respectfully submitted,



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